

REMARKS

Claims 1-21 are all the claims pending in the application. Claim 12-20 are withdrawn from consideration by Examiner. New independent claim 21 has been added.

Statement of Substance of Interview

Applicant thanks the Examiner and Supervisor for the courtesies extended to Yoshimichi Takano and John Bird during the personal interview on April 25, 2005. The drawing objections, rejections under 35 U.S.C. § 112 of claims 2 and 11, and the prior art rejections of claims 2 and 9 were discussed. Applicant has provided remarks below along the lines discussed during the interview.

Drawing Objections

The drawings are objected to because reference characters “2e” and “2f” have both used to designate a groove in Figures 10 and 11. In response, Applicant has deleted the reference character “2f” from these figures in the replacement drawings.

The drawings are objected to because the axial groove 2e in Figures 10 and 11 is not a proper representation of the axial groove being greater in depth than the circumferential groove as shown in Figure 9 and claimed in claim 2. However, as shown in FIGs. 8, 10, and 11, the axial groove 2e is greater in depth than circumferential groove 2d. That is, as shown in FIG. 10, the bottom of axial groove 2e extends closer to the center of shaft member 2 than the bottom of the circumferential groove 2d. Therefore, the axial groove 2e has a greater depth than the circumferential groove 2d.

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AMENDMENTS TO THE DRAWING

Applicant is enclosing herewith two (2) sheets of replacement drawings. The submitted drawings are intended to replace FIG. 10 and FIG. 11 originally filed on October 15, 2003, and are believed to obviate the Examiner's objection in the office action mailed February 9, 2005.

Attachment: Two Replacement Sheets.

Finally, the drawings are objected to because the “deformed inner surface being in press contact with the opposed faces 2i of the circumferential groove at intersection” (claim 2, in particular in Fig. 11) must be shown or the feature(s) canceled from the claims. In response, Applicant has amended FIG. 11 so that the opposing faces 2i of the groove 2d of the exemplary embodiment are in contact with the deformed caulked portion 60b.

In view of the remarks above, and the amendments to FIGs. 10 and 11, Applicant respectfully requests that the Examiner withdraw the drawing objections.

Claim Rejections Under 35 U.S.C. § 112

Claims 2-5 and 11 are rejected under 35 U.S.C. § 112, second paragraph, as being allegedly indefinite.

With respect to the rejection of claims 2-5, the Examiner alleges that both the axial groove and the circumferential groove must be positively recited before these features are referred to in the claim. Accordingly, Applicant has added some of the recitations of dependent claim 2 to independent claim 1 and has made stylistic modifications to the claim. In view of the amendments, it is clear that both an axial groove and a circumferential groove are features of the recited shaft member.

Regarding claim 11, the Examiner alleges that it is unclear whether “the axial member” is the shaft member. In response, Applicant has amended the claim 11 so that the word “axial” is changed to “shaft.”

In addition, the Examiner alleges that the recitation of claim 11 that the axial member is “one of an input shaft and an output shaft” is unclear. In response, Applicant has amended claim

11 so that the claim positively recites that the structure includes both an input shaft and an output shaft and that the axial member is one of these shafts.

Applicant respectfully requests that the Examiner withdraw the §112 rejections in view of these amendments.

Claim Rejections Under 35 U.S.C. § 102 and §103

Claim 1, 6, 7, 9 and 11 are rejected under 35 U.S.C § 102(b) as being anticipated by Chikaraishi (US 6,301,975). Claims 2-5 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Chikaraishi in view of Jackman (US 2,913,290). Claim 8 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Chikaraishi. Claim 10 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Chikaraishi in view of Edgemon, Jr., 3,642,311.

Claims 1

As an initial matter, Applicant has amended the claim 1 to recite that the shaft member includes both an axial groove and a circumferential groove, and that each of these grooves has a cross section having opposed faces substantially parallel to each other. Applicant respectfully requests that the Examiner withdraw the rejection of independent claim 1 at least because there is no combination of Chikaraishi and Jackman that would reasonably disclose or suggest all of the claim's recitations. For example, there is no combination of Chikaraishi and Jackman that would reasonably disclose or suggest the claimed structure including a *caulked portion* provided to the cylindrical member at an intersection of the axial groove and the circumferential groove, the caulked portion having a deformed inner surface in press contact with the opposed faces of the axial groove and the circumferential groove at the intersection.

Chikaraishi discloses a structure comprising a shaft member 3 and a cylindrical member 10. A caulked portion is provided at an end of the cylindrical member 10 at a portion corresponding to the circumferential groove 12 of the shaft member 3.¹ However, Chikaraishi does not disclose a structure in which a caulked portion has a deformed inner surface in press contact with the opposed faces of the axial groove 11 and the circumferential groove 12 at the intersection of these grooves. That is, at least Chikaraishi does not teach that the caulked portion at the end of the cylindrical portion 10 has a deformed inner surface in press contact with the opposed faces of the circumferential groove 12.

Jackman discloses a journal shaft 10 with a bearing sleeve 18. The sleeve 18 includes tabs 20, 22 provided at axial groove 12 and tabs 24, 26 provided at the circumferential groove 16.² However, Jackman does not teach that the tabs 24, 26 are part of a *caulked portion* having a deformed inner surface in press contact with the opposed faces the circumferential groove 16. Jackman discloses that the tabs 24, 26 have substantially the same width as the circumferential groove 16³. These tabs 24, 26 are merely placed within the groove 16 so that the sleeve 18 is held in place by the tight fit between the tabs 24, 26. Although there is contact between Jackman's tabs 24, 26 and the groove 16 because the tabs 24, 26 and the groove 16 are

¹ See Chikarashi at Fig. 5B.

² See Jackman at Figs. 1-3.

³ See Jackman at 2:61-67.

substantially the same size, this contact cannot be considered a deformed inner surface in press contact with the opposed faces of the circumferential groove 16.

In view of the above, Applicant respectfully requests that the Examiner withdraw the rejection of independent claim 1.

Claims 2-9

With respect to dependent claims 2-9, Applicant respectfully requests that the Examiner withdraw the rejection at least because of their dependency from claim 21.

In addition, with respect to dependent claim 9, Applicant also respectfully requests that the Examiner withdraw because there is no combination of Chikaraishi and Jackman that would disclose or suggest the claimed structure in which the cylindrical member is loosely fitted to the shaft member except the caulked portion, which has a deformed inner surface in press contact with the opposed faces of the axial groove and the circumferential groove.

In contrast, Chikaraishi's cylindrical member 10 is fitted to the shaft member through both a caulked portion at the end of the cylindrical member 10⁴ and a semispherical protrusion 13⁵. Moreover, Jackman's sleeve 20 is fitted to the journal shaft 20 at positions along the length of the shaft 20.⁶

⁴ See Chikaraishi at Fig. 5B.

⁵ See Chikaraishi at Fig. 5B & 6:28-42.

⁶ See Jackman at Fig. 1 & 2:20-32.

New Claim 21

The scope of new independent claim 21 is essentially the same as that of original dependent claim 9. Applicant respectfully submits that new claim 21 is patentable at least because Chikaraishi does not disclose the claimed structure in which the cylindrical member is loosely fitted to the shaft member except the caulked portion, the caulked portion having a deformed inner surface in press contact with the opposed faces of the at least one groove. Instead, Chikaraishi discloses that the cylindrical member is fitted to the shaft member through both a caulked portion at the end of the cylindrical member 10⁷ and a *non-caulked portion* at the semispherical protrusion 13 of the cylindrical member.⁸ That is, there is no disclosure in Chikaraishi that the protrusion 13 has a deformed inner surface in press contact with opposing walls of the axial groove 11. Instead, the protrusion 13 is merely fitted within the axial groove 11.⁹

Accordingly, Chikaraishi's cylindrical member 10 cannot be considered as being *not loosely* fitted at only a caulked portion because Chikaraishi's cylindrical member 10 is tightly fitted at *both* the caulked portion and the non-caulked projections 13.

⁷ See Chikaraishi at Fig. 5B.

⁸ See Chikaraishi at 6:28-33.

⁹ See Chikaraishi at 6:33-42.

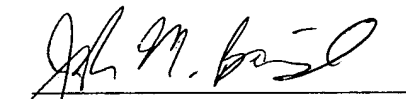
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Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


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